

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF KINGSTON-TERRILL)	
WATER DISTRICT FOR APPROVAL OF A)	CASE NO.
CERTIFICATE OF CONVENIENCE AND NECESSITY)	96-011
TO CONSTRUCT WATER FACILITIES)	

O R D E R

IT IS ORDERED that Kingston-Terrill Water District ("Kingston-Terrill") shall file an original and 10 copies (two copies of engineering-related materials) of the following information with the Commission, with a copy to all parties of record within 21 days from the date of this Order. Kingston-Terrill shall furnish with each response the name of the witness who will be available at the public hearing, if one is held, for responding to questions concerning each item of information requested.

1. If the hydraulic analyses which are provided in response to this information request are computer-generated, provide a copy of the input data on an IBM compatible 5 1/4-inch or 3 1/2-inch floppy disk.

2. Provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the existing water distribution system as presently configured and operated. These hydraulic analyses should demonstrate the operation of all pump stations and the "empty-fill" cycle of all

water storage tanks. Computations are to be documented by a labeled schematic map of the system that shows pipeline sizes, lengths, connections, pumps, water storage tanks, wells, and sea level elevations of key points, as well as allocations of actual customer demands. State whether flows used in the analyses are based on average instantaneous flows, peak instantaneous flows, or any combination or variation thereof. The flows used in the analyses shall be documented by actual field measurements and customer use records. Justify fully any assumptions used in the analyses.

3. Provide a summary of any operational deficiencies of the existing water system that are indicated by the hydraulic analyses or that are known from experience.

4. In order to obtain realistic results when utilizing computer hydraulic analyses to predict a water distribution system's performance, engineering references stress the importance of calibrating the results predicted to actual hydraulic conditions. This calibration process should include matching field measurements to the results predicted by the computer over a wide range of actual operating conditions. At a minimum this should include average and maximum water consumption periods, as well as "fire flow" situations and very high demand periods.

Based on the above, explain the procedures used to verify the computer hydraulic analyses filed in this case. This explanation

should be documented by field measurements, hydraulic calculations, etc.

5. Most engineering references state that instantaneous customer demands can peak at 3 to 15 times the 24-hour average demand. In addition, most engineering references also state that a water distribution system should be designed to meet at least the maximum hourly demand of its customers.

a. State exactly what measurements were made of the maximum hourly usage of Kingston-Terrill. If the maximum hourly usage was not measured directly, state why it was not.

b. State exactly how the diurnal pattern for Kingston-Terrill's water system was determined. Also detail how the diurnal demand multipliers for any hydraulic analyses were determined. This response should be documented by appropriate field measurements.

6. Provide a pressure recording chart showing the actual 24-hour continuously measured pressure available at the locations listed below on Kingston-Terrill's water system. Identify the 24-hour period recorded, the exact location of the pressure recorder, and the sea level elevation of the recorder. Also state the schematic junction number nearest the location of the pressure recorder:

a. In the vicinity of all existing water storage tanks.

b. On the suction and discharge side of all existing pump stations.

c. In the vicinity of the proposed water storage tank location.

d. Any other locations necessary to provide a complete understanding of the existing system's operation in the proposed construction areas.

7. Describe the proposed daily operational sequence of the water system. Documentation should include the methods and mechanisms proposed to provide positive control of all storage tank water levels. The description should also include an hourly summary of how all tanks (existing and proposed) will "work" (expected inflow or outflow of water) and how all pumps will function. The description should be fully supported by appropriate field measurements and hydraulic calculations.

8. Kingston-Terrill filed computer hydraulic analyses for the proposed water distribution system. These analyses did not depict the "on-off" operation of the pumps, the "empty-fill" cycles of the existing and proposed tanks, etc. Based on this, provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the water distribution system with the improvements proposed in this case in place. These hydraulic analyses should demonstrate the operation of all pump stations and the "empty-fill" cycle of all water

storage tanks. Computations are to be documented by a labeled schematic map of the systems that shows pipeline sizes, lengths, connections, pumps, water storage tanks, wells, and sea level elevations of key points, as well as allocations of actual customer demands. Flows used in the analyses shall be identified as to whether they are based on average instantaneous flows, peak instantaneous flows, or any combination or variation thereof. The flows used in the analyses shall be documented by actual field measurements and customer use records. Justify fully any assumptions used in the analyses. (Note - these analyses should use the same schematic as the analyses of the existing water distribution system to facilitate comparison.)

9. The previously filed computer hydraulic analyses for Kingston-Terrill's proposed water distribution system indicate that the potential exists for high pressure (i.e., more than 150 psig) at Nodes 700, 710 and 720. Such pressures violate Commission Regulation 807 KAR 5:066, Section 5(1). What measures is Kingston-Terrill planning to take to protect against this possibility?

10. Provide a list of Kingston-Terrill's water storage tanks. Give the location, capacity, and overflow elevation of each tank. Explain how water is supplied to each tank. Also state whether each tank is in use, and whether it will remain in use, be abandoned or replaced.

11. Provide a list of Kingston-Terrill's existing pump stations. Give the location, number of pumps and their rated capacities, and the purpose of each pump station. Explain how the operation of each pump station is controlled. Provide a copy of the manufacturer's pump characteristics (head/capacity) curve for each of the existing pumps. Identify each curve as to the particular pump and pump station to which it applies. Also state whether the pump is in use, and whether it will remain in use, be abandoned or replaced.

12. Provide a copy of the Bid Tabulation when the bids are received.

13. On pages 5 and 6 of the Preliminary Engineering Report a new booster pumping station is mentioned. However, a new booster pumping station does not appear to be included in the final engineering documents. Clarify this situation. If this construction is to be included in the present case, provide the appropriate construction documents.

14. Provide the final summation of the total cost of construction and funding arrangements ("the Final Engineering Report") when available.

15. The Division of Water ("DOW") approval of the proposed construction project expires on March 6, 1996. The Commission's review of this case will not be finalized prior to this date. Provide an updated approval from the DOW.

Done at Frankfort, Kentucky, this 8th day of March, 1996.

PUBLIC SERVICE COMMISSION


For the Commission

ATTEST:


Executive Director